

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

August 29, 2008

TO: Internal File

THRU: Joe Helfrich, Team Lead *gh*

FROM: Steve Christensen, Environmental Scientist III *SKC*

RE: Permit Application, Carbon Resources LLC, Kinney No. 2 Mine, C/007/0047,
Task ID #2989

SUMMARY:

On June 13th, 2008, the Division of Oil, Gas and Mining (the Division) received a permit application package (the application) from Carbon Resources, LLC (the Permittee). The application was submitted to conduct coal-mining activities approximately ½ mile north of Scofield, UT and east of Utah State Highway 96. Previous coal mining operations have occurred within much of the mine plan area. Several mines existed in the area of the proposed surface facilities (Kinney Mine, Columbine Mine and the Jones Mine). The Permittee has named this coal-mining operation Kinney No. 2 Mine.

The proposed permit area is 448 acres (See Figure 1.0-1, *General Location Map*). Small un-named ephemeral channels convey area drainage from the portal area. Eagles Canyon is located over the ridge to the east of the mine site and Long Canyon is located east of Eagles Canyon. Eagles Canyon has been characterized as ephemeral and Long Canyon contains a perennial stream. All drainages located within the permit area eventually discharge to Scofield Reservoir.

The following is the hydrologic analysis relative to the State of Utah R645-Coal Mining Rules. For the purposes of tracking, this Division review has been assigned a task review number of #2989.

The application should not be approved at this time. The following deficiencies must be addressed prior to Division approval:

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Deficiencies:

R645-301-120: The Permittee should provide legends for all maps within the application. If a map depicts a feature or item of interest that is denoted by a specific symbol or demarcation, that symbol should be noted in a legend and identified. For example, Map 4.7.2.1-1, *Drainage and Sediment Control Plan Undisturbed Drainage Areas*, depicts components of the mine sites drainage design, yet there is no legend on the map that identifies what those components are. Map 3.7.2-1, *Works-Wells-Springs-Faults* depicts numerous geological and hydrologic features that are not identified within the legend. (SC)

R645-301-150: The List of Tables indicates that the application contains Table 3.7-1, *Kinney No. 2 Mine Baseline Monitoring Stations*, at the end of section. Upon review of the application, it does not appear that this table was included in the application. The Permittee should include Table 3.7-1, *Kinney No. 2 Mine Baseline Monitoring Stations*, as indicated in the table of contents. (SC)

R645-302-321- Based on available data or field studies, the application must define the extent of any adjacent alluvial valley floors within the permit and adjacent area. (SC)

R645-301-724.300- The Permittee should provide more discussion/data to address the nature of the material contained within the north-south trending fault systems. On page 3.7-13, 5th paragraph, “*At times shales in or adjacent to fractured or faulted zones will swell, acting as an aquitard thus limiting vertical ground water movement via the fault, and horizontal movement through the fault.*” The Permittee should provide further characterization as to the hydrologic properties of the numerous faults located within and adjacent to the permit area. The application should address how it was determined that the faults serve as confining layers to hydrologic flow within the permit and adjacent area as opposed to (as in some cases within the Utah coal fields) a fault that is capable of transmitting water. (SC)

R645-301-723- The Permittee should provide commitment to conduct all water quality analyses according to the methodology in the current edition of “Standard Methods for the Examination of Water and Wastewater” or the methodology in 40 CFR Parts 136 and 434. Upon review of the application, it did not appear that such a commitment or discussion per R645-301-723 (as to the sampling protocols/standards to be followed) was included. In addition, the Permittee should provide a commitment to submit water quality data electronically to the Division’s Utah Coal Mining Water Quality Database. (SC)

R645-301-724- The Permittee should provide the laboratory analytical reports generated from both the ground and surface water monitoring activities. (SC)

R645-301-724.100- The application should provide a more clear and concise presentation as to the groundwater characterization within the permit and adjacent area. The discussion

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should explicitly address why the minimum groundwater quality samples could not be obtained (with the exception of CR 06-03 ABV) from the monitoring wells depicted on Map 3.7.2.1-1, *Ground Water Level Data*. Exhibit 3.7.2.2-2, *Surface and Ground Water Field Measurements*, outlines the numerous field visits where water level readings were obtained from below, within and above the coal seam. Map 3.7.2.1-1 identifies CR-06-02 as a dry well, however upon review of the field data presented in Exhibit 3.7.2.2-2 water level data was obtained from CR-06-02 fifteen times and exhibited fluctuations of more than four feet. In addition, the application should discuss why the minimum groundwater quality samples were not obtained for Eagle Springs 1A, 2 and 3. (SC)

R645-301-724.100- The application should provide a more clear and concise presentation as to the groundwater characterization within the permit and adjacent area. A regional aquifer is discussed in several instances within the application. It is unclear as to whether the application has provided the data necessary (i.e. water quality, quantity, seasonal fluctuation, usage etc.) in order to accurately characterize the nature/characteristics of the regional aquifer system. The Permittee should provide the data and/or a reference to information that can substantiate the characterization of the regional aquifer system in the permit and adjacent area. Page 3.7-11 of the application states, "Because the lower portion of the Blackhawk Formation is the primary coal-bearing sequence in the area, the regional aquifer system is the only ground water system which could be directly affected by the mining operations". Page 4.7-5 states, "Mining within a regional aquifer is not *anticipated*, however, if it were to occur, a reduction in the amount of water available within the aquifer due to in-mine pumping and extraction, would result in a temporary localized depression of the piezometric surface". The groundwater baseline discussion should provide data and/or a reference that characterizes the seasonal fluctuation of the regional aquifer's potentiometric surface, its usage and its water quality. (SC)

R645-301-724.100- The Permittee should provide a more clear and concise characterization/discussion as to the origin of recharge to the seeps and springs identified within the permit and adjacent area. (SC)

R645-301-724.100- The Permittee must address the following discrepancy. Page 3.7-4 states, "No seeps and springs were found within the permit area itself". However, Map 3.7.1.3-1, *Regional Hydrology* depicts Eagle Springs 1, 1A, 2 and 3 within the permit boundary. (SC)

R645-301-724.100- On page 3.7-9, the application states, "Further evaluation also shows that with the exception of Sulphur Spring, seeps and springs located along the western facing slope of the mine permit area are all located *south* of the mine permit area and are at elevations of 8,000 feet msl or higher". Upon review of Exhibit 3.7.2.2-1, *Seep and Spring Survey* and Map 3.7.1.3-1, it's difficult to determine the locations of the springs located south of the proposed permit area. The application should provide a more clear and concise presentation as to the springs and seeps located within the permit and adjacent area. (SC)

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R645-301-724.100- The Permittee should provide a map that depicts the locations of the groundwater rights within and adjacent to the permit area. Per R645-301-724, the Permittee must provide the location and ownership for the permit and adjacent areas of existing wells, springs and other ground-water resources. The table of contents lists Figure 3.7.2.5-1, *Ground Water Right Locations*, in the table of contents. However, it appears that the figure was not inserted into the application prior to submittal. The locations of these water rights are necessary in order to evaluate the potential impacts from the proposed mining operation on groundwater resources. (SC)

R645-301-724.200 The Permittee should provide data and discussion as to how the characterizations of the Eagle Canyon and UP Canyon drainages were formulated. Page 3.7-17 of the application states, "Minor *perennial* streams drain watersheds adjacent to the proposed permit area including several *small intermittent and ephemeral* tributaries are located within and adjacent to the permit area, including UP Canyon to the south and Eagle canyon to the north." The sentence is unclear. On page 3.7-18, the application states that with the exception of Mud Creek and Long/Miller Canyon, "all other area drainages are characterized by intermittent or ephemeral flow patterns". The Permittee should provide the data that was utilized in determining the flow/usage characteristics as well as the water quality for all drainages located within the permit and adjacent area. The additional information should also be supplied for any undisturbed drainage that intercepts the surface facilities as depicted on Map 4.7.2.1-2. Page 3.7-7 discusses the nature of surface runoff within the disturbed permit area. The application notes that when runoff occurs, it is either sheet flow or small concentrated flow within ephemeral channels. The application should clearly identify and characterize the drainages that intersect the surface facilities. Upon review of map 4.7.2.9-1 and the discussion regarding diversions, it's clear that ephemeral drainages intersect the disturbed area. The surface water baseline information needs to address all drainages within and adjacent to the permit area (i.e. ephemeral, intermittent and perennial). (SC)

R645-301-729- The application does not meet the Baseline Cumulative Impact Area Information requirements of the State of Utah R645-Coal Mining Rules. The Permittee must address the baseline data deficiencies outlined previously in order for the Division to assess the probable cumulative hydrologic impacts from the proposed operation on ground and surface water systems. The Permittee must address the baseline data deficiencies outlined previously in order for the Division to make that assessment. (SC)

R645-301-728- In order to accurately assess the PHC Determination provided in the application, the Permittee must first address the baseline data deficiencies outlined in the Environmental Resource Information section. Per R645-301-728, "The PHC determination will be based on baseline hydrologic, geologic and other information collected for the permit application". Once the baseline deficiencies have been addressed, the Division will be able to accurately assess the probable hydrologic consequences associated with the proposed mining activity. (SC)

R645-301-724.100 -The Permittee should provide a table that clearly identifies the monitoring schedule and sample parameters for each individual water-monitoring site. Table 4.7.2.3-1, *Monitoring Schedule* provides a table listing the parameters and the frequency with which sites will be monitored, however; based upon access issues with surface owners within the permit area, it's the Division's understanding that CR-06-03-ABV and Angle Spring depicted on Map 4.7.2.3-1, *Surface & Ground Water Monitoring Sites* can not be monitored. The application should provide a clear presentation as to what sites are to be monitored (identified by specific Site ID), as well as the sampling frequency and analytical parameters for each individual site. (SC)

R645-301-724.100: The Permittee should remove the sentence on Page 3.7-8 that states, "The first of these wells is located in Eagle Canyon and has been ordered to be abandoned by DOGM". The application is discussing water-monitoring well CR-06-03-ABV. The Division ordered the well to be abandoned due to contract disputes that arose between the landowner and the Permittee. The well was reclaimed because of the language in the Permittee's access agreement and the wishes of the landowners. (SC)

R645-301-724.100: The Permittee should include Table 3.7-1, *Kinney No. 2 Baseline Monitoring Stations*, as identified in the Table of Contents. None of the permit applications submitted to the Division contained this table. (SC)

R645-301-724.200: The Permittee should provide some discussion/justification for not establishing water-monitoring points within Eagle and UP Canyon as well as any ephemeral or intermittent drainage that exists within the proposed permit and adjacent area. (SC)

R645-301-724: The Permittee should include Table 3.7-1, *Kinney No. 2 Baseline Monitoring Stations* as identified in the Table of Contents. None of the permit applications submitted to the Division contained this table. (SC)

R645-301-722: The scale of Exhibit 3.7.2.2-1, *Spring and Seep Survey June 2006*, needs to be enlarged. The map in Exhibit 3.7.2.2-1 depicts the locations/results of the spring and seep survey conducted by Rock Lock Consulting, LLC in June of 2006. However, the scale of the map is such that it's difficult to make out the names and locations of the various springs and seeps. In addition, the proposed permit boundary should be depicted on the map. (SC)

R645-301-722: The Permittee must provide a map that depicts the locations of the groundwater rights located within the permit and adjacent area. A surface water right location map was submitted, however, it appears that a groundwater right location map was not. It is noted however, that a Ground Water Right location map is shown on the table of contents submitted with the application. (SC)

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R645-301-722: The Permittee should provide a cross-section that depicts the relationship between the coal seam to be mined and the groundwater levels encountered during baseline data collection at each of the monitoring wells as show on Map 3.7.2.1-1, *Ground Water Level Data*. (SC)

R645-301-722.200: The Permittee should modify Map 3.7.1.3-1, *Regional Hydrology*. In Section 3.7.3.2 on Page 3.7-17, the application identifies the UP Canyon and Eagle Canyon as “small intermittent and ephemeral tributaries within and adjacent to the permit area”. A hatched line or some demarcation should be utilized to depict the locations of these ephemeral/intermittent drainages. The UP Canyon drainage is not depicted on Map 3.7.1.3-1. In addition, page 4.7-17 discusses the re-establishment of an ephemeral drainage through the disturbed area. Map 3.7.1.3-1 should depict all of the ephemeral, intermittent and perennial drainages that are located within or adjacent to the permit area. (SC)

R645-301-722.200: The Permittee should revise Map 3.7.1.3-1, *Regional Hydrology*. Based on the surface water discussion on page 3.7-16, perennial flows are exhibited in Miller and Long Canyon. However, the aforementioned map depicts the drainage path of the Miller and Long Canyon as a discontinuous blue line. If the flow is perennial, the drainage should be depicted with a solid blue, contiguous line. (SC)

R645-301-722.400: The application must include the location and depth, if available, of water wells in the permit area and adjacent area. Upon review of the application, it's not clear as to whether this regulation has been addressed. If there are no water wells within the permit and adjacent area, the Permittee should provide a brief discussion and provide a reference that supports that conclusion. (SC)

R645-301-746: The Permittee should provide a clear and concise discussion as to how generated coal mine waste will be handled on the mine site. Surface facility item number 9 on Map 4.5.1.2-3, *Surface Facilities*, is listed as a screening and crushing building. If screening is to occur at the mine site, it's assumed that some form of residual material (i.e. coal mine waste) would be produced as a result of that physical processing. The application must provide a discussion as to how coalmine waste will be stored and handled. The discussion should also address the hydrologic design criteria requirement in R645-303-746.212. (SC)

R645-301-.731.210, -220: The Permittee must first address the deficiencies relative to ground and surface water baseline data, geologic baseline data and the PHC before the Division can make a finding that the proposed operational phase monitoring plan meets the requirements of the State of Utah R645-Coal Mining Rules. The water-monitoring plan must be based upon the PHC determination as well as all baseline hydrologic and geologic information. (SC)

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R645-301-731: The application should discuss how acid- and toxic-forming materials will be identified and handled during the construction, operational and reclamation phases of the mining operation. (SC)

R645-301-731.510 The application should discuss the potential for discharges into the underground mine Per R645-301-731.510. Page 4.7-15 of the application discusses gravity discharges of water from the mine, but it does not appear that the application discusses discharges into an underground mine. (SC)

R645-301-751: The Permittee must obtain a Utah Pollutant Discharge Elimination System (UPDES) permit prior to Division approval of the application. A copy of the UPDES permit should be included within the application. (SC)

R645-301-742.300: The Permittee should provide a clear and concise discussion as to which diversions are temporary and which diversions will be permanent. On page 4.7-17 of the application, the Permittee discusses “permanent diversions” which will be constructed following the termination of mining activity. However, Map 4.7.2.9-1, *Mine Surface Facilities Area Post Mining Topography & Interim Drainage Control* appears to depict only one diversion (Culvert UDC-2). (SC)

R645-301-742.300: The Permittee should provide a clear and concise discussion as to the diversions to be utilized at the site. On page 4.5-31 the application discusses the designs of “temporary diversion ditches” and a 10-year, 6-hour storm event. In the same paragraph, the application discusses “collection ditches” and peak flows utilized from a 25-year, 24-hour storm event. Upon reviewing the application, it’s unclear as to what the difference is between a ‘temporary diversion ditch’ and a ‘collection ditch’ and why they would require two different design storm events. Upon reviewing Exhibit 4.7.2.2-1, *Runoff Control Design Details* and Table 4.7.2.2-1, *Ditch Design Details*, it appears that the 10-year, 6-hour storm was utilized in designing all of the diversions. In addition Table 3.7.8.2-1, *Design Rainfall Depths*, does not list a 25-year, 24-hour storm event. (SC)

R645-301-742.300: The Permittee should revise the routing figure provided in Exhibit 4.7.2.2-1. Due to the scale of the drawing, it’s extremely difficult to determine the routing that was utilized in the hydraulic/hydrologic modeling runs. (SC)

R645-301-742.300: In order for the Division to make a finding that the proposed diversions meet the requirements of the State of Utah R645-Coal Mining Rules, the Permittee must first present more information as to the location and characteristics of any drainage that intersects the proposed surface facility. (SC)

R645-301-731.600: The Permittee must address the baseline deficiencies relative to baseline surface water data in order for the Division to determine whether stream buffer zones

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will be required. The Permittee must characterize any drainage that exists within 100 feet of the proposed disturbed area (See Baseline Deficiencies). Upon review of the application, it's clear that drainages intersect the disturbed area of the mine site. (SC)

R645-301-743: The Permittee should clarify the design information provided regarding the sediment pond. On page 4.5-30, the application states, "Sedimentation Pond 1 has been designed to contain or treat the runoff from the 10-year, 24-hour storm event and total design capacity includes storage for at least five years accumulation of sediment." However, on page 4.5-34 of the application, the Permittee states, "The pond has been designed to provide adequate capacity for at least three years accumulation of sediments.." The Permittee must address this discrepancy. (SC)

R645-301-744: The Permittee should provide a clear and concise presentation as to the primary and emergency spillways to be utilized with Sediment Pond 1. Map 4.7.2.1-3 depicts the sediment pond design details. It appears that two spillway devices will be utilized. However, one design drawing of the 24" CMP inlet structure is presented. The profile view at the bottom of Map 4.7.2.1-3 depicts a primary and an emergency spillway tee connected to a riser with the same design detail citation called out. The plan view also shows a primary and emergency spillway with the same design detail citation called out. If the same inlet design is to be utilized for two structures, the text sections of the plan that discuss the sediment pond spillways as well as any design drawings should make that clear. (SC)

R645-301-744: The plan should briefly discuss the ultimate discharge point of the sediment pond in the sediment pond/discharge structure section of the MRP. The MRP should also provide some discussion as to where the overflow water would ultimately report in the event that the pond overflow elevation of 7,690' is breeched. (SC)

R645-301-731, -760: The application should include a map that clearly depicts the ground and surface water monitoring sites to be sampled during the *operational and reclamation phase* of mining. Map 3.7.3.1-1, *Regional Hydrology* and Map 4.7.2.3-1, *Surface and Ground Water Monitoring Sites* both depict well CR-06-03-ABV as a monitoring site. However, on page 4.7-13 the application discusses how groundwater monitoring well CR-06-03-ABV and Angle Spring cannot be monitored due to access limitations resulting from "legal issues". In addition, on page 4.7-13, the application states, "The monitoring network is shown on Map 3.7.1.3-1, *Surface and Ground Water Monitoring Sites*." This appears to be incorrect as Map 3.7.3-1 is entitled *Regional Hydrology*. The Permittee must address this discrepancy in the text. (SC)

R645-301-760: The Permittee must provide a clear and concise discussion as to the hydrologic reclamation components to be implemented at the site. In several places the application discusses 'temporary' and 'permanent' drainages, but does not provide sufficient specificity as to what features of the hydrologic design system are 'temporary' and which ones 'permanent'. In addition, on page 5.5-2 states, "As a component of the planned reclamation

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activities CR will remove *some* temporary operational drainage structures, establish designed permanent post mining drainage structures, and modify *some* of the existing temporary drainage structures to provide for effective drainage..." The Permittee must provide additional detail as to what drainage features are part of what phase of the hydrologic reclamation plan (i.e. temporary, interim or permanent). (SC)

R645-301-760: The Permittee must revise the text of the application as well as Map 4.7.2.9-1 so as to more clearly depict the hydrologic reclamation plan. On page 5.4-4, the application states, "The proposed interim drainage and sediment control plan includes four areas where CR proposes to utilize alternative sediment control methods as the primary means of controlling erosion and sediment contributions." The application then cites Map 4.7.2.9-1 as depicting the sediment control features. Upon review of the map, it's not possible to determine what the 'four areas' are that will be utilizing alternative sediment control. (SC)

R645-301-760: The Permittee must provide a clear depiction of the runoff controls and alternative sediment control measures to be utilized during reclamation. The application discusses the use of alternative sediment controls such as silt fences, hay bales. These alternative sediment control measures and their installation locations do not appear to be on any of the maps submitted in the application. On page 5.5-4 of the application, the Permittee states, "Runoff from the area south of the site access road cannot flow to the sedimentation pond and therefore will be controlled by alternative sediment control measures as shown on Map 4.7.2.9-1." Upon review of the map, it does not appear that the alternative sediment control measures are depicted. (SC)

R645-301-760: The Permittee should provide a reclamation treatment map that clearly depicts what drainage features will be temporary and which drainage features are permanent. The text of the application indicates that a component of the reclamation plan includes the removal of '*some*' temporary operational drainage structures, establish designed permanent post-mining drainage structures, and modify '*some*' of the existing temporary drainage structures to provide for effective drainage and sediment control. (SC)

R645-301-760: The Permittee should clarify Map 4.7.2.9.1, *Post Mining Topography*. Map 4.7.2.9-1 depicts a sediment trap in the legend as a hatched oval. Upon review of the map, the location of the sediment trap is unclear. (SC)

R645-301-729- In order for the Division to make a finding that the mine plan has been designed to prevent material damage to the hydrologic balance outside the permit area, the Permittee must provide additional hydrologic information relative to ground and surface water resources located within and adjacent to the proposed permit area. (SC)

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TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The application does not meet the Permit Application Format and Contents requirements of the State of Utah R645-Coal Mining Rules.

The Permittee should provide legends for all maps within the application. If a map depicts a feature or item of interest that is denoted by a specific symbol or demarcation, that symbol should be noted in a legend and identified. For example, Map 4.7.2.1-1, *Drainage and Sediment Control Plan Undisturbed Drainage Areas*, depicts components of the mine sites drainage design, yet there is no legend on the map that identifies what those components are.

Findings:

The application does not meet the Permit Application Format and Contents requirements of the State of Utah R645-Coal Mining Rules. The following deficiency must be addressed prior to Division approval of the application:

R645-301-120: The Permittee should provide legends for all maps within the application. If a map depicts a feature or item of interest that is denoted by a specific symbol or demarcation, that symbol should be noted in a legend and identified. For example, Map 4.7.2.1-1, *Drainage and Sediment Control Plan Undisturbed Drainage Areas*, depicts components of the mine sites drainage design, yet there is no legend on the map that identifies what those components are. Map 3.7.2-1, *Works-Wells-Springs-Faults* depicts numerous geological and hydrologic features, yet they are not identified within the legend.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

The application does not meet the Completeness requirements as outlined in the State of Utah R645-Coal Mining Rules.

The List of Tables indicates that the application contains a Table 3.7-1, Kinney No. 2 Mine Baseline Monitoring Stations, at the end of section. Upon review of the application, it does not appear that this table was included in the application. The Permittee should include Table 3.7-2, Kinney No. 2 Mine Operational Monitoring stations as indicated in the table of contents.

Findings:

The application does not meet the Completeness requirements as outlined in the State of Utah R645-Coal Mining Rules. The following deficiency must be addressed prior to Division approval of the application:

R645-301-150- The List of Tables indicates that the application contains Table 3.7-1, *Kinney No. 2 Mine Baseline Monitoring Stations*, at the end of section. Upon review of the application, it does not appear that this table was included in the application. The Permittee should include Table 3.7-1, *Kinney No. 2 Mine Baseline Monitoring Stations*, as indicated in the table of contents.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The application meets the General Environmental Resource Information requirements as outlined in the State of Utah R645-Coal Mining Rules.

On page 1.0-2 of the application the Permittee provides a general discussion as to the nature/characteristics of the drainage within the permit and adjacent area. A description of the existing hydrologic resources is provided beginning on page 3.7-3. A spring and seep survey of the area is provided in Exhibit 3.7.2.2-1.

Findings:

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The application meets the General Environmental Resource Information requirements as outlined in the State of Utah R645-Coal Mining Rules.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The application meets the Climatological Resource Information requirements as outlined in the State of Utah R645-Coal Mining Rules.

The application discusses the general climatological conditions of the permit area on page 3.7-5. Specific data relative to precipitation, temperature and wind speed is provided in Section 3.7-4. The Permittee utilized the SNOTEL meteorological reporting stations that were closest to the proposed permit area. These stations were identified as Clear Creek #1, Clear Creek #2, Scofield Dam as well as Price, Utah. The Clear Creek and Scofield Dam sites provided temperature, precipitation and snowfall data. The Price, Utah SNOTEL site provided the wind direction data.

The Permittee based the climactic characterization provided in the application on the historical climate data collected from the aforementioned SNOTEL meteorological reporting stations. Specific discussion of the temperature, precipitation and wind data are provided on pages 3.7-24-3.7-25 of the application.

Findings:

The application meets the Climatological Resource Information requirements as outlined in the State of Utah R645-Coal Mining Rules.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

The application does not meet the Alluvial Valley Floor Determination requirements of the State of Utah R645-Coal Mining Rules.

The applicant must demonstrate, based on available data or field studies, the presence or absence of an AVF within the proposed permit and adjacent areas. On page 3.7-26, the application discusses alluvial valley floors (AVF's). The application states, "While limited areas downstream from the study area contain resource values consistent with the AVF criteria, present and future mining activities will not change the status or condition of the geology, soils or water resources associated with these areas". The aforementioned statement suggests that alluvial valley floors may be present within the vicinity of the proposed mine site.

The application further discusses alluvial valley floors in Section 7.11. The Permittee asserts that possible alluvial valley floors may be present within the adjacent area of the proposed permit area.

The application should explicitly demonstrate in the application whether AVF's are within the proposed permit and adjacent area. The demonstration can and should be based on the baseline soil, geologic and hydrologic information submitted with the application.

Findings:

The application does not meet the Alluvial Valley Floor Determination requirements of the State of Utah R645-Coal Mining Rules. The following deficiency must be addressed prior to Division approval of the application:

R645-302-321- Based on available data or field studies, the application must define the extent of any adjacent alluvial valley floors within the permit and adjacent area.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

The application does not meet the Geologic Resource Information requirements as outlined in the State of Utah R645-Coal Mining Rules.

Detailed geologic information is provided in Section 3.6 of the application. The geologic conditions in the permit and adjacent areas were characterized by utilizing information from

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studies/reports as well as from previous and ongoing baseline monitoring activities. The geologic data set includes data from 70 drill holes, with 26 of them located within the proposed permit boundary (See Figure 3.6-1, *Drill Hole Locations*).

Additionally, the application provides a discussion of the primary regional geologic formations on page 3.7-6. The discussion lists and describes these stratigraphic units in order beginning with the lowermost stratigraphic unit and working upward. Figure 3.6-9, *Hiawatha OVERBURDEN ISOPACHS & Mining Blocks*, provides the overburden thickness above the Hiawatha coal seam.

The application does not provide the geologic information necessary in order to determine the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent area.

The Permittee should provide more discussion/data to address the nature of the material contained within the north-south trending fault systems. On page 3.7-13, 5th paragraph, "*At times shales in or adjacent to fractured or faulted zones will swell, acting as an aquitard thus limiting vertical ground water movement via the fault, and horizontal movement through the fault.*" The Permittee should provide further characterization as to the hydrologic properties of the numerous faults located within and adjacent to the permit area. The application should address whether the faults serve as confining layers to hydrologic flow within the permit and adjacent area or (as in some cases within the Utah coal fields) whether the faults are capable of transmitting water.

Findings:

The application does not meet the Geologic Resource Information requirements as outlined in the State of Utah R645-Coal Mining Rules. The following deficiency should be addressed prior to Division of approval of the application.

R645-301-724.300- The Permittee should provide more discussion/data to address the nature of the material contained within the north-south trending fault systems. On page 3.7-13, 5th paragraph, "*At times shales in or adjacent to fractured or faulted zones will swell, acting as an aquitard thus limiting vertical ground water movement via the fault, and horizontal movement through the fault.*" The Permittee should provide further characterization as to the hydrologic properties of the numerous faults located within and adjacent to the permit area. The application should address whether the faults serve as confining layers to hydrologic flow within the permit and adjacent area or (as in some cases within the Utah coal fields) whether the faults capable of transmitting water.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The application does not meet the Geologic Resource Information requirements as outlined in the State of Utah R645-Coal Mining Rules.

The Permittee should provide commitment to conduct all water quality analyses according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Upon review of the application, it did not appear that such a commitment or discussion (as to the sampling protocols/standards to be followed) was included. If such a commitment was made in the application, the Permittee should provide a reference as to where it can be found.

In addition, the Permittee should provide a commitment to submit water quality data electronically to the Division's Utah Coal Mining Water Quality Database.

Baseline Information

The application does not meet the baseline information requirements as required by the State of Utah R645-Coal Mining Rules.

The application presents baseline ground and surface water information in Section 3.7. The hydrologic characterizations are based on available regional information as well as ongoing water monitoring. Exhibit 3.7.2.2-1 presents a spring and seep inventory of the permit and adjacent areas.

The application provides the surface and ground water field measurements obtained during the baseline data collection in Exhibit 3.7.2.2-2, *Surface and Ground Water Field Measurements*. Exhibit 3.7.2.4-1, *Surface and Ground Water Quality Data*, provides the laboratory analytical results utilized to characterize the water chemistry of the surface and groundwater within the proposed permit and adjacent area.

The Permittee should provide the laboratory analytical reports generated from both the ground and surface water monitoring activities.

Groundwater

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Beginning on page 3.7-5, the application discusses the groundwater resources within the proposed permit and adjacent area. The application provides an overview of the geologic formations within the proposed permit and adjacent area that greatly influence the behavior and chemistry of the groundwater resources.

The application identifies four aquifer systems within the proposed permit and adjacent area on page 3.7-9. The four-aquifer systems include the: alluvial/colluvial aquifer system, perched/isolated ground water systems, stored mine water system and the regional ground water system and provides a discussion of each as they relate to the proposed permit and adjacent area.

The application should provide a more clear and concise presentation as to the groundwater characterization within the permit and adjacent area. The discussion should explicitly address why the minimum groundwater quality samples could not be obtained (with the exception of CR 06-03 ABV) from the monitoring wells depicted on Map 3.7.2.1-1, *Ground Water Level Data*. Exhibit 3.7.2.2-2, *Surface and Ground Water Field Measurements*, outlines the numerous field visits where water level readings were obtained from below, within and above the coal seam. Map 3.7.2.1-1 identifies CR-06-02 as a dry well, however upon review of the field data presented in Exhibit 3.7.2.2-2 water level data was obtained from CR-06-02 fifteen times and exhibited fluctuations of more than four feet.

In addition, the application should discuss why the minimum groundwater quality samples were not obtained for Eagle Springs 1A, 2 and 3.

The application should provide a more clear and concise presentation as to the groundwater characterization within the permit and adjacent area. A regional aquifer is discussed in several instances within the application. It is unclear as to whether the application has provided the data necessary (i.e. water quality, quantity, seasonal fluctuation, usage etc.) in order to accurately characterize the nature/characteristics of the regional aquifer system. The Permittee should provide the data and/or a reference to information that can substantiate the characterization of the regional aquifer system in the permit and adjacent area. Page 3.7-11 of the application states, "Because the lower portion of the Blackhawk Formation is the primary coal-bearing sequence in the area, the regional aquifer system is the only ground water system which could be directly affected by the mining operations". Page 4.7-5 states, "Mining within a regional aquifer is not *anticipated*, however, if it were to occur, a reduction in the amount of water available within the aquifer due to in-mine pumping and extraction, would result in a temporary localized depression of the piezometric surface". The groundwater baseline discussion should provide data and/or a reference that characterizes the seasonal fluctuation of the regional aquifer's potentiometric surface, it's usage and it's water quality.

The Permittee should provide a more clear and concise characterization/discussion as to the origin of recharge to the seeps and springs identified within the permit and adjacent area.

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The Permittee must address the following discrepancy. Page 3.7-4 states, "No seeps and springs were found within the permit area itself". However, Map 3.7.1.3-1, *Regional Hydrology* depicts Eagle Springs 1, 1A, 2 and 3 within the permit boundary.

In addition, on page 3.7-9, the application states, "Further evaluation also shows that with the exception of Sulphur Spring, seeps and springs located along the western facing slope of the mine permit area are all located *south* of the mine permit area and are at elevations of 8,000 feet msl or higher". Upon review of Exhibit 3.7.2.2-1, Seep and Spring Survey and Map 3.7.1.3-1, it's difficult to determine the locations of the springs located south of the proposed permit area.

The Permittee should provide a map that depicts the locations of the groundwater rights within and adjacent to the permit area. Per R645-301-724, the Permittee must provide the location and ownership for the permit and adjacent areas of existing wells, springs and other ground-water resources. The table of contents lists Figure 3.7.2.5-1, Ground Water Right Locations, in the table of contents. However, it appears that the figure was not inserted into the application prior to submittal. The locations of these water rights are necessary in order to evaluate the potential impacts from the proposed mining operation on groundwater resources.

Page 3.7-12 (3rd Paragraph): Wells CR-06-01, CR-06-02, CR-06-05A and CR-06-09 all penetrate and are screened within the Hiawatha Coal seam. Wells CR-06-02 ABV, CR-06-03-ABV and CR-06-09 ABV all penetrate and are screened into potential water bearing zones above the Hiawatha coal seam. Wells CR-06-01 BLW and CR-06-09 BLW penetrate zones below the Hiawatha seam.

Surface Water

Beginning on page 3.7-16, the application discusses the surface water resources within the permit and adjacent area. Figure 3.7.3.5-1, *Surface Water Right Locations*, depicts the locations of the surface water rights located within the permit and adjacent area. Table 3.7.5-1, *Surface Water Rights*, provides a comprehensive list of the surface water rights located within the permit and adjacent area.

Surface water in the permit and adjacent areas is limited to Scofield Reservoir, perennial flows within Mud Creek, Miller and Long Canyon and ephemeral flows from various side drainages. The permit and adjacent area fall within the Upper Price River watershed. Perennial streams within the area adjacent to the mine site are Mud Creek and Miller Canyon. These drainages are tributary to Scofield Reservoir.

In May 2005, the Permittee began water-monitoring activities on Scofield Reservoir, Mud Creek and Miller Canyon. Figure 3.7.3.3-2, *Flow Data*, provides the flow monitoring data collected by the Permittee on the major surface drainages located adjacent to the proposed permit

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area. In addition, Scofield Reservoir water levels have been monitored in order to establish seasonal variation and are provided in Figure 3.7.3.3-2, *Flow Data*.

Surface water quality is discussed beginning on page 3.7-20 of the application. Surface water quality is summarized in Table 3.7.2.4-1, *Surface and Ground Water Quality Summary*. Exhibit 3.7.2.2-2, *Surface and Ground Water Field Measurements*, provides a summary of the field data collected during baseline monitoring. In addition, Exhibit 3.7.2.4-1, *Surface and Ground Water Quality Data*, provides a summary of the laboratory analytical data obtained during baseline data collection. Table 4.7.2.3-1, *Monitoring Schedule*, provides the frequency and chemical parameters that were analyzed during baseline data collection.

The Permittee should provide data and discussion as to how the characterizations of the Eagle Canyon and UP Canyon drainages were formulated. Page 3.7-17 of the application states, "Minor *perennial* streams drain watersheds adjacent to the proposed permit area including several *small intermittent and ephemeral* tributaries are located within and adjacent to the proposed permit area, including UP Canyon to the south and Eagle canyon to the north." The sentence is unclear. On page 3.7-18, the application states that with the exception of Mud Creek and Long/Miller Canyon, "all other area drainages are characterized by intermittent or ephemeral flow patterns". The Permittee should provide the data that was utilized in determining the flow/usage characteristics for all drainages located within the permit and adjacent area. The additional information should also be supplied for any undisturbed drainage that intercepts the surface facilities as depicted on Map 4.7.2.1-2. Page 3.7-7 discusses the nature of surface runoff within the disturbed permit area. The application notes that when runoff occurs, it is either sheet flow or small concentrated flow within ephemeral channels. The application should clearly identify and characterize the drainages that intersect the surface facilities. Upon review of map 4.7.2.9-1 and the discussion regarding diversions, it's clear that ephemeral drainages intersect the disturbed area. The surface water baseline information needs to address all drainages within and adjacent to the permit area (i.e. ephemeral, intermittent and perennial).

Baseline Cumulative Impact Area Information

The application does not meet the Baseline Cumulative Impact Area Information requirements of the State of Utah R645-Coal Mining Rules. The Permittee must address the baseline data deficiencies outlined previously in order for the Division to assess the probable cumulative hydrologic impacts from the proposed operation on ground and surface water systems. The Permittee must address the baseline data deficiencies outlined previously in order for the Division to make that assessment.

Modeling

The application meets the Modeling requirements of the State of Utah R645-Coal Mining Rules.

On page 3.7-29 of the application, the Permittee discusses the modeling methods/techniques that were utilized in designing the various hydraulic/hydrologic components of the proposed mining operation.

In order to the design the collection system ditches and culverts, the Permittee utilized Hydrologic Modeling Software (HEC-HMS) 3.1.0 developed by the Army Corps of Engineers using the Soil Conservation Service (SCS) curve number loss method and the SCS unit hydrograph transform method.

Drainage basins were delineated in AutoCAD by utilizing existing and proposed elevation contour data and the location of proposed pads and storm drainage facilities. Drainage basins were modeled in HEC-HMS using the SCS unit hydrograph transform method.

Exhibit 4.7.2.2-1, *Hydrology and Hydraulics Ditches and Culverts, Sedimentation Pond 1, Energy Dissipation Structures*, provides the model calculations/runs.

Probable Hydrologic Consequences Determination

The application does not meet the Probable Hydrologic Consequences (PHC) requirements of the State of Utah R645-Coal Mining Rules.

In order to accurately assess the PHC Determination provided in the application, the Permittee must first address the baseline data deficiencies outlined in the Baseline Information section. Per R645-301-728, "The PHC determination will be based on baseline hydrologic, geologic and other information collected for the permit application". Once the baseline deficiencies have been addressed, the Division will be able to accurately assess the probable hydrologic consequences associated with the proposed mining activity.

Groundwater Monitoring Plan

The application does not meet the Groundwater Monitoring Plan requirements of the State of Utah R645-Coal Mining Rules.

On page 4.7-12, the application discusses the ground water monitoring plan for the proposed mining activity. Table 3.7-1, Kinney Mine Baseline Monitoring Stations, is described as identifying the monitoring stations to be utilized at the site; however, it was unable to be located within the application. Table 4.7.2.3-1, *Monitoring Schedule*, provides the parameters to be analyzed during the course of the continued baseline, operational and reclamation phase water

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monitoring. Table 4.7.2.3-1 does not specify by site ID which of the ground water sites is actively monitored. Map 4.7.2.3-1, *Surface & Ground Water Monitoring Sites*, depicts all of the ground and surface water sites that were monitored during baseline data collection.

The Permittee should provide a table that clearly identifies the monitoring schedule and sample parameters for each individual water-monitoring site. Table 4.7.2.3-1, *Monitoring Schedule* provides a table listing the parameters and the frequency with which sites will be monitored, however; based upon access issues with surface owners within the permit area, it's the Division's understanding that CR-06-03-ABV and Angle Spring depicted on Map 4.7.2.3-1, *Surface & Ground Water Monitoring Sites* can not be monitored. The application should provide a clear presentation as to what sites are to be monitored (identified by specific Site ID), as well as the sampling frequency and analytical parameters for each individual site.

The Permittee should remove the sentence on Page 3.7-8 that states, "The first of these wells is located in Eagle Canyon and has been ordered to be abandoned by DOGM". The application is discussing water-monitoring well CR-06-03-ABV. The Division ordered the well to be abandoned due to contract disputes that arose between the landowner and the Permittee. The well was ultimately reclaimed because of the language in the access agreement and the wishes of the landowners.

The Permittee should include Table 3.7-1, *Kinney No. 2 Baseline Monitoring Stations*, as identified in the Table of Contents. None of the permit applications submitted to the Division contained this table.

Surface-Water Monitoring Plan

The application does not meet the Groundwater Monitoring Plan requirements of the State of Utah R645-Coal Mining Rules.

On page 4.7-12, the application discusses the ground water monitoring plan for the proposed mining activity. Table 3.7-1, *Kinney Mine Baseline Monitoring Stations*, is described as identifying the monitoring stations to be utilized at the site; however, it was unable to be located within the application. Table 4.7.2.3-1, *Monitoring Schedule*, provides the parameters to be analyzed during the course of the continued baseline, operational and reclamation phase water monitoring. Table 4.7.2.3-1 does not specify by site ID which of the ground water sites is actively monitored. Map 4.7.2.3-1, *Surface & Ground Water Monitoring Sites*, depicts all of the ground and surface water sites that were monitored during baseline data collection.

The Permittee should provide some discussion/justification for not establishing water-monitoring points within Eagle and UP Canyon as well as any ephemeral or intermittent drainage that exists within the proposed permit and adjacent area.

The Permittee should include Table 3.7-1, Kinney No. 2 Baseline Monitoring Stations as identified in the Table of Contents. None of the permit applications submitted to the Division contained this table.

Findings:

The application does not meet the Hydrologic Resource Information Requirements as required by the State of Utah R645-Coal Mining Rules. The following deficiencies must be addressed prior to Division approval:

R645-301-723- The Permittee should provide commitment to conduct all water quality analyses according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Upon review of the application, it did not appear that such a commitment or discussion (as to the sampling protocols/standards to be followed) was included. In addition, the Permittee should provide a commitment to submit water quality data electronically to the Division's Utah Coal Mining Water Quality Database.

R645-301-724- The Permittee should provide the laboratory analytical reports generated from both the ground and surface water monitoring activities.

R645-301-724.100- The application should provide a more clear and concise presentation as to the groundwater characterization within the permit and adjacent area. The discussion should explicitly address why the minimum groundwater quality samples could not be obtained (with the exception of CR 06-03 ABV) from the monitoring wells depicted on Map 3.7.2.1-1, *Ground Water Level Data*. Exhibit 3.7.2.2-2, *Surface and Ground Water Field Measurements*, outlines the numerous field visits where water level readings were obtained from below, within and above the coal seam. Map 3.7.2.1-1 identifies CR-06-02 as a dry well, however upon review of the field data presented in Exhibit 3.7.2.2-2 water level data was obtained from CR-06-02 fifteen times and exhibited fluctuations of more than four feet.

In addition, the application should discuss why the minimum groundwater quality samples were not obtained for Eagle Springs 1A, 2 and 3.

R645-301-724.100- The application should provide a more clear and concise presentation as to the groundwater characterization within the permit and adjacent area. A regional aquifer is discussed in several instances within the application. It is unclear as to whether the application has provided the data necessary (i.e. water quality, quantity, seasonal fluctuation, usage etc.) in order to accurately characterize the nature/characteristics of the regional aquifer system. The Permittee should provide the data and/or a reference to information that can substantiate the characterization of the regional aquifer system in the permit and adjacent area. Page 3.7-11 of the application states, "Because the lower portion of the Blackhawk Formation is the primary

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coal-bearing sequence in the area, the regional aquifer system is the only ground water system which could be directly affected by the mining operations". Page 4.7-5 states, "Mining within a regional aquifer is not *anticipated*, however, if it were to occur, a reduction in the amount of water available within the aquifer due to in-mine pumping and extraction, would result in a temporary localized depression of the piezometric surface". The groundwater baseline discussion should provide data and/or a reference that characterizes the seasonal fluctuation of the regional aquifer's potentiometric surface, it's usage and it's water quality.

R645-301-724.100- The Permittee should provide a more clear and concise characterization/discussion as to the origin of recharge to the seeps and springs identified within the permit and adjacent area.

R645-301-724.100- The Permittee must address the following discrepancy. Page 3.7-4 states, "No seeps and springs were found within the permit area itself". However, Map 3.7.1.3-1, *Regional Hydrology* depicts Eagle Springs 1, 1A, 2 and 3 within the permit boundary.

R645-301-724.100- In addition, on page 3.7-9, the application states, "Further evaluation also shows that with the exception of Sulphur Spring, seeps and springs located along the western facing slope of the mine permit area are all located *south* of the mine permit area and are at elevations of 8,000 feet msl or higher". Upon review of Exhibit 3.7.2.2-1, Seep and Spring Survey and Map 3.7.1.3-1, it's difficult to determine the locations of the springs located south of the proposed permit area.

R645-301-724.100- The Permittee should provide a map that depicts the locations of the groundwater rights within and adjacent to the permit area. Per R645-301-724, the Permittee must provide the location and ownership for the permit and adjacent areas of existing wells, springs and other ground-water resources. The table of contents lists Figure 3.7.2.5-1, Ground Water Right Locations, in the table of contents. However, it appears that the figure was not inserted into the application prior to submittal. The locations of these water rights are necessary in order to evaluate the potential impacts from the proposed mining operation on groundwater resources.

R645-301-724.200 The Permittee should provide data and discussion as to how the characterizations of the Eagle Canyon and UP Canyon drainages were formulated. Page 3.7-17 of the application states, "Minor *perennial* streams drain watersheds adjacent to the proposed permit area including several *small intermittent and ephemeral* tributaries are located within and adjacent to the permit area, including UP Canyon to the south and Eagle canyon to the north." The sentence is unclear. On page 3.7-18, the application states that with the exception of Mud Creek and Long/Miller Canyon, "all other area drainages are characterized by intermittent or ephemeral flow patterns". The Permittee should provide the data that was utilized in determining the flow/usage characteristics as well as the water quality for all drainages located within the permit and adjacent area. The additional information should also be supplied for any

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undisturbed drainage that intercepts the surface facilities as depicted on Map 4.7.2.1-2. Page 3.7-7 discusses the nature of surface runoff within the disturbed permit area. The application notes that when runoff occurs, it is either sheet flow or small concentrated flow within ephemeral channels. The application should clearly identify and characterize the drainages that intersect the surface facilities. Upon review of map 4.7.2.9-1 and the discussion regarding diversions, it's clear that ephemeral drainages intersect the disturbed area. The surface water baseline information needs to address all drainages within and adjacent to the permit area (i.e. ephemeral, intermittent and perennial).

R645-301-729- The application does not meet the Baseline Cumulative Impact Area Information requirements of the State of Utah R645-Coal Mining Rules. The Permittee must address the baseline data deficiencies outlined previously in order for the Division to assess the probable cumulative hydrologic impacts from the proposed operation on ground and surface water systems. The Permittee must address the baseline data deficiencies outlined previously in order for the Division to make that assessment.

R645-301-728- In order to accurately assess the PHC Determination provided in the application, the Permittee must first address the baseline data deficiencies outlined in the Baseline Information section. Per R645-301-728, "The PHC determination will be based on baseline hydrologic, geologic and other information collected for the permit application". Once the baseline deficiencies have been addressed, the Division will be able to accurately assess the probable hydrologic consequences associated with the proposed mining activity.

R645-301-724.100 -The Permittee should provide a table that clearly identifies the monitoring schedule and sample parameters for each individual water-monitoring site. Table 4.7.2.3-1, Monitoring Schedule provides a table listing the parameters and the frequency with which sites will be monitored, however; based upon access issues with surface owners within the permit area, it's the Division's understanding that CR-06-03-ABV and Angle Spring depicted on Map 4.7.2.3-1, *Surface & Ground Water Monitoring Sites* can not be monitored. The application should provide a clear presentation as to what sites are to be monitored (identified by specific Site ID), as well as the sampling frequency and analytical parameters for each individual site.

R645-301-724.100: The Permittee should remove the sentence on Page 3.7-8 that states, "The first of these wells is located in Eagle Canyon and has been ordered to be abandoned by DOGM". The application is discussing water-monitoring well CR-06-03-ABV. The Division ordered the well to be abandoned due to contract disputes that arose between the landowner and the Permittee. The well was ultimately reclaimed because of the language in the access agreement and the wishes of the landowners.

R645-301-724.100: The Permittee should include Table 3.7-1, Kinney No. 2 *Baseline Monitoring Stations*, as identified in the Table of Contents. None of the permit applications submitted to the Division contained this table.

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R645-301-724.200: The Permittee should provide some discussion/justification for not establishing water-monitoring points within Eagle and UP Canyon as well as any ephemeral or intermittent drainage that exists within the proposed permit and adjacent area.

R645-301-724: The Permittee should include Table 3.7-1, Kinney No. 2 Baseline Monitoring Stations as identified in the Table of Contents. None of the permit applications submitted to the Division contained this table.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Monitoring and Sampling Location Maps

The application meets the Monitoring and Sampling Location Maps requirements of the State of Utah R645-Coal Mining Rules. Map 3.7.1.3-1, Regional Hydrology, depicts the ground and surface water monitoring locations that were utilized obtaining baseline ground and surface water data.

Subsurface Water Resource Maps

The application does not meet the Subsurface Water Resource map requirements of the State of Utah R645-Coal Mining Rules.

The scale of Exhibit 3.7.2.2-1, *Spring and Seep Survey June 2006*, needs to be enlarged. The map in Exhibit 3.7.2.2-1 depicts the locations/results of the spring and seep survey conducted by Rock Lock Consulting, LLC in June of 2006. However, the scale of the map is such that it's difficult to make out the names and locations of the various springs and seeps. In addition, the proposed permit boundary should be depicted on the map.

The Permittee must provide a map that depicts the locations of the groundwater rights located within the permit and adjacent area. A surface water right location map was submitted, however, it appears that a groundwater right location map was not. It is noted however, that a Ground Water Right location map is shown on the table of contents submitted with the application.

The Permittee should provide a cross-section that depicts the relationship between the coal seam to be mined and the groundwater levels encountered during baseline data collection at each of the monitoring wells as show on Map 3.7.2.1-1, *Ground Water Level Data*.

Surface Water Resource Maps

The application does not meet the Surface Water Resource maps requirements of the State of Utah R645-Coal Mining Rules.

Map 3.7.1.3-1, *Regional Hydrology*, depicts the surface water resources within the permit and adjacent area. In addition, Figure 3.7.3.5-1, *Surface Water Right Locations*, depicts the surface water rights located within the permit and adjacent area.

The Permittee should modify Map 3.7.1.3-1, *Regional Hydrology*. In Section 3.7.3.2 on Page 3.7-17, the application identifies the UP Canyon and Eagle Canyon as "small intermittent and ephemeral tributaries within and adjacent to the permit area". A hatched line or some demarcation should be utilized to depict the locations of these ephemeral/intermittent drainages. The UP Canyon drainage is not depicted on Map 3.7.1.3-1. In addition, page 4.7-17 discusses the re-establishment of an ephemeral drainage through the disturbed area. Map 3.7.1.3-1 should depict all of the ephemeral, intermittent and perennial drainages that are located within or adjacent to the permit area.

The Permittee should revise Map 3.7.1.3-1, *Regional Hydrology*. Based on the surface water discussion on page 3.7-16, perennial flows are exhibited in Miller and Long Canyon. However, the aforementioned map depicts the drainage path of the Miller and Long Canyon as a discontinuous blue line. If the flow is perennial, the drainage should be depicted with a solid blue, contiguous line.

Well Maps

The application does not meet the Well Maps requirements of the State of Utah R645-Coal Mining Rules.

The application must include the location and depth, if available, of water wells in the permit area and adjacent area. Upon review of the application, it's not clear as to whether this regulation has been addressed. If there are no water wells within the permit and adjacent area, the Permittee should provide a brief discussion and provide a reference that supports that conclusion.

Findings:

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The application does not meet the Maps, Plans and Cross Sections of Resource Information requirements of the State of Utah R645-Coal Mining Rules. The following deficiencies should be addressed prior to Division approval:

R645-301-722: The scale of Exhibit 3.7.2.2-1, *Spring and Seep Survey June 2006*, needs to be enlarged. The map in Exhibit 3.7.2.2-1 depicts the locations/results of the spring and seep survey conducted by Rock Lock Consulting, LLC in June of 2006. However, the scale of the map is such that it's difficult to make out the names and locations of the various springs and seeps. In addition, the proposed permit boundary should be depicted on the map.

R645-301-722: The Permittee must provide a map that depicts the locations of the groundwater rights located within the permit and adjacent area. A surface water right location map was submitted, however, it appears that a groundwater right location map was not. It is noted however, that a Ground Water Right location map is shown on the table of contents submitted with the application.

R645-301-722: The Permittee should provide a cross-section that depicts the relationship between the coal seam to be mined and the groundwater levels encountered during baseline data collection at each of the monitoring wells as show on Map 3.7.2.1-1, *Ground Water Level Data*.

R645-301-722.200: The Permittee should modify Map 3.7.1.3-1, *Regional Hydrology*. In Section 3.7.3.2 on Page 3.7-17, the application identifies the UP Canyon and Eagle Canyon as "small intermittent and ephemeral tributaries within and adjacent to the permit area". A hatched line or some demarcation should be utilized to depict the locations of these ephemeral/intermittent drainages. The UP Canyon drainage is not depicted on Map 3.7.1.3-1. In addition, page 4.7-17 discusses the re-establishment of an ephemeral drainage through the disturbed area. Map 3.7.1.3-1 should depict all of the ephemeral, intermittent and perennial drainages that are located within or adjacent to the permit area.

R645-301-722.200: The Permittee should revise Map 3.7.1.3-1, *Regional Hydrology*. Based on the surface water discussion on page 3.7-16, perennial flows are exhibited in Miller and Long Canyon. However, the aforementioned map depicts the drainage path of the Miller and Long Canyon as a discontinuous blue line. If the flow is perennial, the drainage should be depicted with a solid blue, contiguous line.

R645-301-722.400: The application must include the location and depth, if available, of water wells in the permit area and adjacent area. Upon review of the application, it's not clear as to whether this regulation has been addressed. If there are no water wells within the permit and adjacent area, the Permittee should provide a brief discussion and provide a reference that supports that conclusion.

OPERATION PLAN

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable Resources Survey

The application meets the Renewable Resources Survey requirements of the State of Utah R645-Coal Mining Rules.

On page 4.5-28 under Subsidence Control, the Permittee discusses the mining techniques to be utilized. No secondary mining, or pillar extraction, or longwall mining that would result in subsidence is planned for the Kinney No. 2 Mine. With the absence of such methods, no subsidence is anticipated. As a result, a renewable resources survey is not required at this time.

If at some point in the future, the Permittee proposes to implement any form of secondary mining/pillar extraction, a renewable resources survey will be required at that time.

Subsidence Control Plan

The application meets the Subsidence Control Plan requirements of the State of Utah R645-Coal Mining Rules.

On page 4.5-28 under Subsidence Control, the Permittee discusses the mining techniques to be utilized. No secondary mining, or pillar extraction, or longwall mining that would result in subsidence is planned for the Kinney No. 2 Mine. With the absence of such methods, no subsidence is anticipated.

The mine plan is based on the retention of barrier pillars and first mining only, with no pillar extraction. This design, combined with the mining depth, should minimize fracture propagation at or near the ground surface in areas overlying the underground workings. As a result, drainage of overlying perched aquifer systems and alteration of surface infiltration characteristics should be reduced.

Findings:

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The application meets the Subsidence Control Plan requirements of the State of Utah R645-Coal Mining Rules.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES DONE

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Plans and Drawings

The application meets the Plans and Drawings requirements of the State of Utah R645-Coal Mining Rules for Road Systems and Other Transportation Facilities.

The application discusses the roads to be constructed beginning on page 4.5-9. The application states, "Seven primary access roads will be required in conjunction with the proposed mining". Map 4.5.1.2-3, *Surface Facilities*, depicts the locations of the proposed primary roads. Figure 4.5-3 depicts the typical cross-sections to be constructed for both level and sloping terrain conditions. A registered Professional Engineer (P.E.) has certified the cross-sections as required by the State of Utah R645-Coal Mining Rules. Map 4.7.2.1-2, *Drainage and Sediment Control Plan Disturbed Drainage Areas*, depicts the locations of the various road design components (i.e. ditches and culverts). Exhibit 4.7.2.2-2, *Runoff Control Details*, provides detailed design and installation information for the components of the road drainage system.

Performance Standards

The application meets the Performance Standards for Road Systems as required by the State of Utah R645-Coal Mining Rules.

The road ditches and culvert structures were designed to safely pass the 10-year, 6-hour storm event. On page 4.7-27, the Permittee commits to incorporate inlet and outlet protection as well as trash racks to minimize plugging and erosion.

On page 3.7-29 of the application, the Permittee discusses the modeling methods/techniques that were utilized in designing the various hydraulic/hydrologic components of the proposed mining operation. In order to design the collection system ditches and culverts, the Permittee utilized Hydrologic Modeling Software (HEC-HMS) 3.1.0 developed by the Army Corps of Engineers using the Soil Conservation Service (SCS) curve number loss method and the SCS unit hydrograph transform method. Drainage basins were delineated in AutoCAD by utilizing existing and proposed elevation contour data and the location of proposed pads and storm drainage facilities. Drainage basins were modeled in HEC-HMS using the SCS unit hydrograph transform method. Exhibit 4.7.2.2-1, *Hydrology and Hydraulics Ditches and*

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Culverts, Sedimentation Pond 1, Energy Dissipation Structures, provides the model calculations/runs. Map 4.7.2.1-4, *Drainage and Sediment Control Plan Disturbed Drainage Sub-Basins*, depicts the sub-basin delineations of the mine site. The sub-basins peak flows were then calculated in order to properly size the culverts and diversion ditches.

The application discusses road drainage on page 4.7-26. Table 4.7.2.2-1, *Ditch Design Details*, provides the design considerations and details for the diversion ditches to be constructed and utilized at the mine site. Table 4.7.2.2-2, *Culvert Design Details*, provides the design considerations and details for the culverts to be installed at the mine site.

Findings:

The application meets the Road Systems and Other Transportation Facilities requirements of the State of Utah R645-Coal Mining Rules.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes DONE

The application meets the Disposal of Noncoal Mine Wastes as required by the State of Utah R645-Coal Mining Rules.

On page 4.5-33, the Permittee discusses the generation and disposal of noncoal waste. The application discusses that used oil and lubricants, garbage, paper waste, machinery parts, tires, cable, wood waste and other miscellaneous debris will be generated by the proposed mining activity. Smaller sized noncoal solid wastes will be stored in dumpsters. Larger solid waste materials (i.e. used equipment, machinery parts, tires etc.) will be temporarily stored in designated sap yards as located on Map 4.5.1.2-3, *Surface Facilities*.

A contract disposal service will regularly collect and haul the smaller noncoal solid wastes from the dumpsters to the permitted Carbon County municipal landfill, or to the East Carbon Development Corporation facility.

Depending on market conditions for used machinery, scarp, metal etc., the larger noncoal solid waste will be collected periodically either by a salvage contractor or by a contract disposal firm which will haul these materials off-site to a permitted disposal site.

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Any waste other than used oil/lubricants that don't meet applicable EPA requirements will be collected and stored in either closed drums or in the waste oil storage tank located in the maintenance shop building. The temporary storage areas for this waste will provide for full containment in order to prevent an accidental release of petroleum products to flow into the sites surface drainage system.

Coal Mine Waste, Refuse Piles, Return of Coal Processing Waste to Abandoned Underground Workings

The application does not meet the Coal Mine Waste requirements of the State of Utah R645-Coal Mining Rules.

The Permittee should provide a clear and concise discussion as to how generated coal mine waste will be handled on the mine site. Surface facility item number 9 on Map 4.5.1.2-3, *Surface Facilities*, is listed as a screening and crushing building. If screening is to occur at the mine site, it's assumed that some form of residual material (i.e. coal mine waste) will be produced as a result of that process. The application must provide a discussion as to how coalmine waste will be stored and handled. The discussion should also address the hydrologic design criteria requirement in R645-303-746.212.

Impounding Structures

The application meets the Impounding Structures requirements of the State of Utah R645-Coal Mining Rules. The application does not propose constructing an impound structure out of coalmine waste.

Excess Spoil:

The application meets the Excess Spoil requirements of the State of Utah R645-Coal Mining Rules.

The State of Utah R645-Coal Mining Rules define 'spoil' as overburden that has been removed during coal mining and reclamation operations. This material is generally associated with surface mining operations. As the proposed Kinney No. 2 mine site is an underground operation, the excess spoil regulations don't apply.

Findings:

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The application does not meet the Spoil and Waste Materials requirements of the State of Utah R645-Coal Mining Rules. The following deficiencies must be addressed prior to Division approval:

R645-301-746: The Permittee should provide a clear and concise discussion as to how generated coal mine waste will be handled on the mine site. Surface facility item number 9 on Map 4.5.1.2-3, *Surface Facilities*, is listed as a screening and crushing building. If screening is to occur at the mine site, it's assumed that some form of residual material (i.e. coal mine waste) will be produced as a result of that process. The application must provide a discussion as to how coalmine waste will be stored and handled. The discussion should also address the hydrologic design criteria requirement in R645-303-746.212.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The application meets the General Hydrologic Information requirements of the State of Utah R645-Coal Mining Rules. Section 3.7 of the application provides an extensive discussion and presentation of general ground and surface water resources within the permit and adjacent area.

Groundwater Monitoring

The application does not meet the Groundwater Monitoring requirements of the State of Utah R645-Coal Mining Rules.

The Permittee first address the deficiencies relative to groundwater baseline data, geologic baseline data and the PHC before the Division can make a finding that the proposed operational phase groundwater monitoring plan meets the requirements of the State of Utah R645-Coal Mining Rules. Per R645-301-731.211, the groundwater-monitoring plan must be based upon the PHC determination as well as all baseline hydrologic and geologic information.

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Surface Water Monitoring

The application does not meet the Surface Water Monitoring requirements of the State of Utah R645-Coal Mining Rules.

The Permittee must address the deficiencies relative to surface water baseline data, geologic baseline data and the PHC before the Division can make a finding that the proposed operational phase groundwater monitoring plan meets the requirements of the State of Utah R645-Coal Mining Rules. Per R645-301-731.220, the surface water-monitoring plan must be based upon the PHC determination as well as all baseline hydrologic and geologic information.

Acid- and Toxic-Forming Materials and Underground Development Waste

The application does not meet the Acid- and Toxic-Forming Materials and Underground Development Waste requirements of the State of Utah R645-Coal Mining Rules.

The application should discuss how acid- and toxic-forming materials would be identified and handled during the construction, operational and reclamation phases of the mining operation.

Transfer of Wells

The application meets the Transfer of Wells requirements of the State of Utah R645-Coal Mining Rules.

On page 4.7-21 of the application, the casing and sealing of wells is discussed. The Permittee commits to plugging and sealing all exploration boreholes and any boreholes which have been converted to monitoring wells during mining reclamation.

On page 4.6-2 of the application, the Permittee outlines the methods to be utilized in plugging any water monitoring wells/boreholes. The boreholes or casing will be sealed with cement to form a plug from the bottom of the hole to at least 20 feet above any zone of completion or water bearing rock strata. The remainder of the hole will be filled with concrete to within 20 feet of the ground surface and then filling the remainder of the hole to the ground surface with cement to form a surface plug. In addition, the Permittee commits to placing a steel fence post in the center of the surface plug before the cement sets up in order to provide a permanent marker of the hole location.

Discharges Into An Underground Mine

The application does not meet the Discharges Into an Underground Mine requirements of the State of Utah R645-Coal Mining Rules.

The application should discuss the potential for discharges into the underground mine Per R645-301-731.510. Page 4.7-15 of the application discusses gravity discharges of water from the mine, but it does not appear that the application discusses discharges into an underground mine.

Gravity Discharges From Underground Mines

The application meets the Gravity Discharges From Underground Mines requirements of the State of Utah R645-Coal Mining Rules.

On page 4.7-15 of the application, discharges at the mine site are discussed. The application states, "There are no plans to develop, divert or discharge any surface water into any underground mine in conjunction with ongoing mining and reclamation operations at the Kinney Mine". As the Kinney mine workings will progress down dip from the outcrop area, the potential for direct gravity discharge of water from the mine is considered low.

The application does propose methods for the disposal/handling of any in-mine water that's encountered. The proposed methods include: 1) discharge the water into remote or abandoned mine workings, 2) request a new NPDES discharge permit for surface drainage, 3) construct shallow or deep injection wells, 4) treat and discharge the water into Mud Creek or 5) evaporate the discharge with new settling ponds.

Upon completion of mining activity, the Permittee commits to sealing and backfilling all mine openings to prevent any potential for ground water discharge or surface water inflows in mine portal areas or boreholes.

Water-Quality Standards And Effluent Limitations

The application does not meet the Water-Quality Standards and Effluent Limitations requirements of the State of Utah R645-Coal Mining Rules.

The Permittee must obtain a Utah Pollutant Discharge Elimination System (UPDES) permit prior to Division approval of the application. A copy of the UPDES permit should be included within the application.

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Diversions: General

The application does not meet the Diversions: General requirements of the State of Utah R645-Coal Mining Rules.

The application discusses diversions and associated structures on page 4.7-17 of the application. The surface facilities will be constructed to intercept and divert surface runoff flows from undisturbed up gradient areas around the mine surface facilities areas.

The Permittee commits to conducting period inspections of all ditches and culverts. The inspections will focus on identifying and repairing any significant ditch erosion, removal of any trash or debris from the ditches as well as maintenance of an adequate cross-sectional flow area to pass the design storm event. Culvert maintenance will involve the removal of trash and debris from the inlets as well as the repair of any significant erosion at culvert inlets. In addition, the Permittee commits to repairing or replacing any damaged culvert.

The Permittee should provide a clear and concise discussion as to which diversions are temporary and which diversions will be permanent. On page 4.7-17 of the application, the Permittee discusses "permanent diversions" which will be constructed following the termination of mining activity. However, Map 4.7.2.9-1, *Mine Surface Facilities Area Post Mining Topography & Interim Drainage Control* appears to depict only one diversion (Culvert UDC-2).

The Permittee should provide a clear and concise discussion as to the diversions to be utilized at the site. On page 4.5-31 the application discusses the designs of "temporary diversion ditches" and a 10-year, 6-hour storm event. In the same paragraph, the application discusses "collection ditches" and peak flows utilized from a 25-year, 24-hour storm event. Upon reviewing the application, it's unclear as to what the difference is between a 'temporary diversion ditch' and a 'collection ditch' and why they would require two different design storm events. Upon reviewing Exhibit 4.7.2.2-1, *Runoff Control Design Details* and Table 4.7.2.2-1, *Ditch Design Details*, it appears that only the 10-year, 6-hour storm was utilized in designing the diversions. In addition Table 3.7.8.2-1, *Design Rainfall Depths*, does not list a 25-year, 24-hour storm event.

The Permittee should revise the routing figure provided in Exhibit 4.7.2.2-1. Due to the scale of the drawing, it's extremely difficult to determine the routing that was utilized in the hydraulic/hydrologic modeling runs.

Map 4.7.2.1-1, *Drainage and Sediment Control Plan Undisturbed Drainage Areas*, depicts the watersheds that used to calculate the peak flows.

Map 4.7.2.1-4, *Drainage and Sediment Control Plan Disturbed Drainage Sub-Basins*, depict the sub-watershed boundaries utilized in designing the various components of the mine sites drainage system.

Map 4.7.2.1-2, *Drainage and Sediment Control Plan Disturbed Drainage Areas*, depicts the disturbed drainage system to be constructed at the mine-site. According to page 4.7-17 of the application, the map depicts "all temporary diversions".

The design calculations for the temporary and permanent diversions are provided in Exhibit 4.7.2.2-1, *Runoff Control Design Details*.

Diversions: Perennial, Intermittent Streams and Miscellaneous Flows

The application does not meet the Diversions: Perennial and Intermittent Streams requirements of the State of Utah R645-Coal Mining Rules.

In order for the Division to make a finding that the proposed diversions meet the requirements of the State of Utah R645-Coal Mining Rules, the Permittee must first present more information as to the location and characteristics of any drainage that intersects the proposed surface facility.

Stream Buffer Zones

The application does not meet the Stream Buffer Zone requirements of the State of Utah R645-Coal Mining Rules.

The Permittee must address the baseline deficiencies relative to baseline surface water data in order for the Division to determine whether stream buffer zones will be required. The Permittee must characterize any drainage that exists within 100 feet of the proposed disturbed area (i.e. are they perennial, intermittent or ephemeral and how was that determined). Upon review of the application, it appears that drainages may intersect the disturbed area of the mine site.

Sediment Control Measures

The application meets the Sediment Control Measure requirements of the State of Utah R645-Coal Mining Rules.

Erosion and sediment control measures are discussed on page 4.7-16. Runoff generated on the site during mining operations will be contained and controlled by utilizing a network of ditches, culverts, a sedimentation pond and alternate sediment control methods. The network will be comprised of diversion ditches which route undisturbed runoff around or through the

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disturbed area, collection ditches which intercept disturbed area runoff and route it to the sedimentation pond and the sediment pond.

On page 4.7-10, the Permittee commits to utilizing various drainage control measures to prevent or mitigate excessive erosion and sediment transport. These measures include: the placement of straw bales, sediment fence, erosion netting, mulch berms, stilling basins, sumps and other small structures to control and surface runoff and limit erosion.

Map 4.7.2.2-2, *Kinney No. 2 Mine Runoff Control Details*, provides the design drawings for various components of the sediment control measures to be implemented at the site. The drawings include typical silt fence and straw bale installations, headwall protection measures, channel designs and drainage berm details.

On page 4.5-8, the Permittee states, "Due to the importance of effective water quality protection, required drainage and sediment control structures will be constructed prior to any other significant site disturbance." The construction of the sediment pond, and principal undisturbed drainage diversion ditches and disturbed area collection ditches will occur first in the construction phase according to the application on page 4.5-8.

Siltation Structures: Sedimentation Ponds

The application does not meet the Siltation Structures: Sedimentation Ponds requirements of the State of Utah R645-Coal Mining Rules.

The primary sediment control measure to be implemented at the mine site is a sole sediment pond. Map 4.7.2.1-3, *Sedimentation Pond 1 Section & Details*, provides the design drawings for Sediment Pond 1. Map 4.7.2.1-1, *Drainage And Sediment Control Plan Undisturbed Drainage Area* depicts the location of the sediment pond relative to the undisturbed drainage areas east of the mine site.

Exhibit 4.7.2.2-1, *Runoff Control Design Details*, provide the design calculations and methodology utilized in designing the sediment pond. As required by R645-301-742.221.33, the sediment pond has been designed to retain the surface runoff volume produced a 10-year, 24-hour storm event. The runoff generated from the adjacent undisturbed areas are to be diverted around the mine site and as such, were not considered in the sediment pond design.

On page 4.7-20 the application discusses the sediment pond maintenance procedures. The sediment pond maintenance procedures include: ongoing sampling and discharge monitoring under applicable provisions of the UPDES permit, quarterly inspections of pond embankments, impoundment areas, discharge structures and inlet/outlet structures as well as reporting any hazardous conditions, maintenance and repair of any problems noted during the inspections as well as the periodic removal of accumulated sediment. Control of potential water

quality impacts from pond discharge will be monitored through the compliance with the UPDES permit. During the quarterly inspections, the depth and elevation of any impounded water will be measured and based on those measurements, the storage capacity will be estimated as well. If the inspections identify any potential public hazard, the Permittee will promptly notify the Division.

On page 4.5-30, the application discusses the sediment pond design. The application states, "Sedimentation Pond 1 has been designed to contain or treat the runoff from the 10-year, 24-hour storm event and total design capacity includes storage for at least five years accumulation of sediment. The pond spillway structures have been designed to safely pass the runoff from the 100-year, 6-hour storm event.

The Permittee should clarify the design information provided regarding the sediment pond. On page 4.5-30, the application states, "Sedimentation Pond 1 has been designed to contain or treat the runoff from the 10-year, 24-hour storm event and total design capacity includes storage for at least five years accumulation of sediment." However, on page 4.5-34 of the application, the Permittee states, "The pond has been designed to provide adequate capacity for at least three years accumulation of sediments.." The Permittee must address this discrepancy.

Discharge Structures

The application does not meet the Discharge Structure requirements of the State of Utah R645-Coal Mining Rules.

The Permittee should provide a clear and concise presentation as to the primary and emergency spillways to be utilized with Sediment Pond 1. Map 4.7.2.1-3 depicts the sediment pond design details. It appears that two spillway devices will be utilized. However, one design drawing of the 24" CMP inlet structure is presented. The profile view at the bottom of Map 4.7.2.1-3 depicts a primary and an emergency spillway tee connected to a riser with the same design detail citation called out. The plan view also shows a primary and emergency spillway with the same design detail citation called out. If the same inlet design is to be utilized for two structures, the text sections of the plan that discuss the sediment pond spillways as well as any design drawings should make that clear.

The plan should briefly discuss the ultimate discharge point of the sediment pond in the sediment pond/discharge structure section of the MRP. The MRP should also provide some discussion as to where the overflow water would ultimately report in the event that the pond overflow elevation of 7,690' is breeched.

Findings:

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The application does not meet the Hydrologic Information requirements of the State of Utah R645-Coal Mining Rules. The following deficiencies must be addressed prior to Division approval:

R645-301-.731.210, -220: The Permittee first address the deficiencies relative to ground and surface water baseline data, geologic baseline data and the PHC before the Division can make a finding that the proposed operational phase monitoring plan meets the requirements of the State of Utah R645-Coal Mining Rules. Per the State of Utah R645-Coal Mining Rules, the water-monitoring plan must be based upon the PHC determination as well as all baseline hydrologic and geologic information.

R645-301-731: The application should discuss how acid- and toxic-forming materials would be identified and handled during the construction, operational and reclamation phases of the mining operation.

R645-301-731.510 The application should discuss the potential for discharges into the underground mine Per R645-301-731.510. Page 4.7-15 of the application discusses gravity discharges of water from the mine, but it does not appear that the application discusses discharges into an underground mine.

R645-301-751: The Permittee must obtain a Utah Pollutant Discharge Elimination System (UPDES) permit prior to Division approval of the application. A copy of the UPDES permit should be included within the application.

R645-301-742.300: The Permittee should provide a clear and concise discussion as to which diversions are temporary and which diversions will be permanent. On page 4.7-17 of the application, the Permittee discusses "permanent diversions" which will be constructed following the termination of mining activity. However, Map 4.7.2.9-1, *Mine Surface Facilities Area Post Mining Topography & Interim Drainage Control* appears to depict only one diversion (Culvert UDC-2).

R645-301-742.300: The Permittee should provide a clear and concise discussion as to the diversions to be utilized at the site. On page 4.5-31 the application discusses the designs of "temporary diversion ditches" and a 10-year, 6-hour storm event. In the same paragraph, the application discusses "collection ditches" and peak flows utilized from a 25-year, 24-hour storm event. Upon reviewing the application, it's unclear as to what the difference is between a 'temporary diversion ditch' and a 'collection ditch' and why they would require two different design storm events. Upon reviewing Exhibit 4.7.2.2-1, *Runoff Control Design Details* and Table 4.7.2.2-1, *Ditch Design Details*, it appears that only the 10-year, 6-hour storm was utilized in designing the diversions. In addition Table 3.7.8.2-1, *Design Rainfall Depths*, does not list a 25-year, 24-hour storm event.

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R645-301-742.300: The Permittee should revise the routing figure provided in Exhibit 4.7.2.2-1. Due to the scale of the drawing, it's extremely difficult to determine the routing that was utilized in the hydraulic/hydrologic modeling runs.

R645-301-742.300: In order for the Division to make a finding that the proposed diversions meet the requirements of the State of Utah R645-Coal Mining Rules, the Permittee must first present more information as to the location and characteristics of any drainage that intersects the proposed surface facility.

R645-301-731.600: The Permittee must address the baseline deficiencies relative to baseline surface water data in order for the Division to determine whether stream buffer zones will be required. The Permittee must characterize any drainage that exists within 100 feet of the proposed disturbed area (i.e. are they perennial, intermittent or ephemeral and how was that determined). Upon review of the application, it appears that drainages may intersect the disturbed area of the mine site.

R645-301-743: The Permittee should clarify the design information provided regarding the sediment pond. On page 4.5-30, the application states, "Sedimentation Pond 1 has been designed to contain or treat the runoff from the 10-year, 24-hour storm event and total design capacity includes storage for at least five years accumulation of sediment." However, on page 4.5-34 of the application, the Permittee states, "The pond has been designed to provide adequate capacity for at least three years accumulation of sediments.." The Permittee must address this discrepancy.

R645-301-744: The Permittee should provide a clear and concise presentation as to the primary and emergency spillways to be utilized with Sediment Pond 1. Map 4.7.2.1-3 depicts the sediment pond design details. It appears that two spillway devices will be utilized. However, one design drawing of the 24" CMP inlet structure is presented. The profile view at the bottom of Map 4.7.2.1-3 depicts a primary and an emergency spillway tee connected to a riser with the same design detail citation called out. The plan view also shows a primary and emergency spillway with the same design detail citation called out. If the same inlet design is to be utilized for two structures, the text sections of the plan that discuss the sediment pond spillways as well as any design drawings should make that clear.

R645-301-744: The plan should briefly discuss the ultimate discharge point of the sediment pond in the sediment pond/discharge structure section of the MRP. The MRP should also provide some discussion as to where the overflow water would ultimately report in the event that the pond overflow elevation of 7,690' is breached.

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MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Monitoring and Sampling Location Maps

The application does not meet the Monitoring and Sampling Location Maps requirements of the State of Utah R645-Coal Mining Rules.

The application should include a map that clearly depicts the ground and surface water monitoring sites to be sampled during the *operational phase* of mining. Map 3.7.3.1-1, *Regional Hydrology* and Map 4.7.2.3-1, *Surface and Ground Water Monitoring Sites* both depict well CR-06-03-ABV as a monitoring site. However, on page 4.7-13 the application discusses how groundwater monitoring well CR-06-03-ABV and Angle Spring cannot be monitored due to access limitations resulting from "legal issues".

In addition, on page 4.7-13, the application states, "The monitoring network is shown on Map 3.7.1.3-1, *Surface and Ground Water Monitoring Sites*." This appears to be incorrect as Map 3.7.3-1 is entitled *Regional Hydrology*. The Permittee must address this discrepancy in the text.

Findings:

The application does not meet the Monitoring and Sampling Location Maps requirements of the State of Utah R645-Coal Mining Rules. The following deficiency must be addressed prior to Division approval of the application:

R645-301-731: The application should include a map that clearly depicts the ground and surface water monitoring sites to be sampled during the *operational phase* of mining. Map 3.7.3.1-1, *Regional Hydrology* and Map 4.7.2.3-1, *Surface and Ground Water Monitoring Sites* both depict well CR-06-03-ABV as a monitoring site. However, on page 4.7-13 the application discusses how groundwater monitoring well CR-06-03-ABV and Angle Spring cannot be monitored due to access limitations resulting from "legal issues". In addition, on page 4.7-13, the application states, "The monitoring network is shown on Map 3.7.1.3-1, *Surface and Ground Water Monitoring Sites*." This appears to be incorrect as Map 3.7.3-1 is entitled *Regional Hydrology*. The Permittee must address this discrepancy in the text.

RECLAMATION PLAN

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The application meets the Mine Opening requirements of the State of Utah R645-Coal Mining Rules.

On page 5.5-4 of the application, the Permittee discusses the casing and sealing of wells, boreholes and mine openings. The Permittee commits to sealing and backfilling the monitoring wells once the Division has made a finding that they are no longer needed for monitoring. On page 4.6-2, the application discusses how the monitoring wells will be sealed. The boreholes or well casings will be sealed by filling them with cement to form a plug from the bottom of the hole to at least 20 feet above any zone of completion or water-bearing zone. The remainder of the hole will be filled with cement to within 20 feet of the ground surface and then the remainder of the hole will be filled with cement to the ground surface to form a surface plug. A steel fence post will be placed in the center of the surface plug in order to provide a permanent marker of the hole location.

The Permittee states on page 5.5-4, "CR does not intend to transfer title of any monitoring wells to a second party following the cessation of mining and reclamation activities."

Findings:

The application meets the Mine Opening requirements of the State of Utah R645-Coal Mining Rules.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

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Reclamation

The application meets the Roads Systems and Other Transportation Facilities requirements of the State of Utah R645-Coal Mining Rules.

On page 5.5-2 of the application, the Permittee states, "Roads that will not be retained for use under an approved postmining land use will be reclaimed immediately after they are no longer needed for coal mining and reclamation activities". The reclamation of the roads will be accomplished by reshaping all cut and fill slopes to be compatible with the post-mining land use and to compliment the drainage pattern of the surrounding topography.

Map 4.7.2.9-1, *Mine Surface Facilities Area Post Mining topography & Interim Drainage Control*, depicts the mine site post-mining and reclamation. As depicted on Map 4.7.2.9-1 as well as documented on page 5.4-4, sections of road will remain on the site permanently after reclamation efforts as part of the land use agreement with the surface owner.

Findings:

The application meets the Road Reclamation requirements of the State of Utah R645-Coal Mining Rules.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The application does not meet the General Reclamation Plan requirements of the State of Utah R645-Coal Mining Rules.

In Section 5.5, the application discusses the hydrologic restoration plans to be implemented during the reclamation phase of the mining operation. On page 5.5-1, the application states, "CR has incorporated specific control and mitigation measures in mining, processing and reclamation plans in order to prevent any significant impacts on surface or ground water quality." The reclamation plan involves backfilling and regarding disturbed areas, replacement of soil, re-establishment of pre-mining drainage patterns and establishing a vegetative community. A component of the reclamation plan includes the removal of some temporary operational drainage structures, establish designed permanent post-mining drainage

structures, and modify some of the existing temporary drainage structures to provide for effective drainage and sediment control. Following this discussion the application references Section 5.4.2.1.

On page 5.5-2, the Permittee discusses the removal and reclamation of temporary drainage/sediment control structures. When no longer needed for sediment control, all temporary diversions will be removed and the affected lands reclaimed. The Permittee proposes to fill the diversion ditches with material from adjacent areas. Grading will blend the temporary ditch areas with the surrounding topography.

Sediment pond reclamation will include the removal of the man-made discharge structures, removal and disposal of any riprap, concrete and bedding materials which will not be utilized in conjunction with the reestablishment of post-mining drainages. (Section 5.5.2-1 pg. 5.5-2).

Section 5.4.2.1 discusses the reclamation timing and sequencing to be employed at the mine site. The last paragraph of page 5.4-4 begins to outline the interim drainage controls to be in place during the reclamation liability period. The application states, the proposed interim drainage and sediment control plan includes four areas where CR proposes to utilize alternative sediment control methods as the primary means of controlling erosion and sediment contributions". The application cites Map 4.7.2.9-1 as "showing the four areas which will utilize alternative sediment control", however the map does not clearly identify these four areas.

The Permittee proposes to control erosion and sediment transport during reclamation of the interim drainage and sediment control structures with a combination of silt fences, hay bales and other appropriate alternative sediment control measures. On page 5.4-5, the Permittee commits to installing these temporary controls prior to "any reclamation activities." The alternative sediment controls are to remain in place during backfill/regarding operations, placement of soil material, reseeding and re-establishment of vegetation. The structures will be removed once vegetation has been reestablished on the site.

On page 5.4-7 of the application, the Permittee discusses the restoration of drainage patterns at the mine site. The application states, "In conjunction with final backfilling and regarding activities, permanent drainage features, designed to pass the peak flows from the 100-year, 6-hour event, will be established to effectively pass natural drainage through the reclaimed areas and provide for effective control of runoff from reclaimed areas while minimizing the potential for any significant erosion." The application continues that "some temporary drainage structures may be retained and modified as necessary to carry disturbed area drainage flows from permanent drainages to the sedimentation pond which will also be retained to provide ongoing sediment control through the extended liability period." The Permittee must provide additional detail as to what drainage features are part of what phase of the hydrologic reclamation plan (i.e temporary, interim or permanent).

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In order to demonstrate that pre-mining drainage patterns have been restored, the Permittee will provide documentation to the Division with one of two methods or by a combination of: 1) Comparing pre- and post-mining water monitoring data as well as analyzing applicable effluent standards and 2) Providing runoff and sedimentation modeling results by utilizing measured reclamation vegetation cover values and calculated sediment contributions with that of modeling results developed using baseline pre-mining vegetative cover values.

Map 4.7.2.9-1, Post Mining Topography and Interim Drainage Control, depicts the drainage controls to be utilized during reclamation.

The Permittee must provide a clear and concise discussion as to the hydrologic reclamation components to be implemented at the site. In several places the application discusses 'temporary' and 'permanent' drainages, but does not provide sufficient specificity as to what features of the hydrologic design system are 'temporary' and which ones 'permanent'. In addition, on page 5.5-2 states, "As a component of the planned reclamation activities CR will remove *some* temporary operational drainage structures, establish designed permanent postmining drainage structures, and modify *some* of the existing temporary drainage structures to provide for effective drainage..." The Permittee must provide additional detail as to what drainage features are part of what phase of the hydrologic reclamation plan (i.e. temporary, interim or permanent).

The Permittee must revise the text of the application as well as Map 4.7.2.9-1 so as to more clearly depict the hydrologic reclamation plan. On page 5.4-4, the application states, "The proposed interim drainage and sediment control plan includes four areas where CR proposes to utilize alternative sediment control methods as the primary means of controlling erosion and sediment contributions." The application then cites Map 4.7.2.9-1 as depicting the sediment control features. Upon review of the map, it's not possible to determine what the 'four areas' are that will be utilizing alternative sediment control.

Findings:

The application does not meet the Hydrologic Reclamation Plan requirements of the State of Utah R645-Coal Mining Rules. The following deficiencies must be addressed prior to Division approval:

R645-301-760: The Permittee must provide a clear and concise discussion as to the hydrologic reclamation components to be implemented at the site. In several places the application discusses 'temporary' and 'permanent' drainages, but does not provide sufficient specificity as to what features of the hydrologic design system are 'temporary' and which ones 'permanent'. In addition, on page 5.5-2 states, "As a component of the planned reclamation activities CR will remove *some* temporary operational drainage structures, establish designed

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permanent post mining drainage structures, and modify *some* of the existing temporary drainage structures to provide for effective drainage..." The Permittee must provide additional detail as to what drainage features are part of what phase of the hydrologic reclamation plan (i.e. temporary, interim or permanent).

R645-301-760: The Permittee must revise the text of the application as well as Map 4.7.2.9-1 so as to more clearly depict the hydrologic reclamation plan. On page 5.4-4, the application states, "The proposed interim drainage and sediment control plan includes four areas where CR proposes to utilize alternative sediment control methods as the primary means of controlling erosion and sediment contributions." The application then cites Map 4.7.2.9-1 as depicting the sediment control features. Upon review of the map, it's not possible to determine what the 'four areas' are that will be utilizing alternative sediment control.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Reclamation Treatments Maps

The application does not meet the Reclamation Facilities Map requirements of the State of Utah R645-Coal Mining Rules.

Map 4.7.2.9-1, *Post Mining Topography & Interim Drainage Control*, depicts the mine site following mining and reclamation activities. The map identifies culvert UDC-2 as an undisturbed drainage post-mining land use. In addition, the map denotes that Sediment Pond 1 will be removed at the end of reclamation.

The Permittee must provide a clear depiction of the runoff controls and alternative sediment control measures to be utilized during reclamation. The application discusses the use of alternative sediment controls such as silt fences, hay bales. These alternative sediment control measures and their installation locations do not appear to be on any of the maps submitted in the application. On page 5.5-4 of the application, the Permittee states, "Runoff from the area south of the site access road cannot flow to the sedimentation pond and therefore will be controlled by alternative sediment control measures as shown on Map 4.7.2.9-1." Upon review of the map, it does not appear that the alternative sediment control measures are depicted.

The Permittee should provide a reclamation treatment map that clearly depicts what drainage features will be temporary and which drainage features are permanent. The text of the

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application indicates that a component of the reclamation plan includes the removal of 'some' temporary operational drainage structures, establish designed permanent post-mining drainage structures, and modify 'some' of the existing temporary drainage structures to provide for effective drainage and sediment control.

The Permittee should clarify Map 4.7.2.9.1, *Post Mining Topography*. Map 4.7.2.9-1 depicts a sediment trap in the legend as a hatched oval. Upon review of the map, the location of the sediment trap is unclear.

Reclamation Monitoring And Sampling Location Maps DONE FOR REAL

The application does not meet the Reclamation Monitoring and Sampling Location Map requirements of the State of Utah R645-Coal Mining Rules.

The Permittee must provide a map that clearly depicts the water monitoring to be conducted during reclamation. The application indicates that Map 4.7.2.3-1, *Surface and Ground Water Monitoring Sites* depicts the locations of the reclamation monitoring sites. However Map 4.7.2.3-1 depicts a monitoring location that is inaccessible due to an access dispute with the surface landowners.

Findings:

The application does not meet the Maps, Plans and Cross Sections of Reclamation Operations requirements of the State of Utah R645-Coal Mining Rules. The following deficiencies must be addressed prior to Division approval:

R645-301-760: The Permittee must provide a clear depiction of the runoff controls and alternative sediment control measures to be utilized during reclamation. The application discusses the use of alternative sediment controls such as silt fences, hay bales. These alternative sediment control measures and their installation locations do not appear to be on any of the maps submitted in the application. On page 5.5-4 of the application, the Permittee states, "Runoff from the area south of the site access road cannot flow to the sedimentation pond and therefore will be controlled by alternative sediment control measures as shown on Map 4.7.2.9-1." Upon review of the map, it does not appear that the alternative sediment control measures are depicted.

R645-301-760: The Permittee should provide a reclamation treatment map that clearly depicts what drainage features will be temporary and which drainage features are permanent. The text of the application indicates that a component of the reclamation plan includes the removal of 'some' temporary operational drainage structures, establish designed permanent post-mining drainage structures, and modify 'some' of the existing temporary drainage structures to provide for effective drainage and sediment control.

R645-301-760: The Permittee should clarify Map 4.7.2.9.1, *Post Mining Topography*. Map 4.7.2.9-1 depicts a sediment trap in the legend as a hatched oval. Upon review of the map, the location of the sediment trap is unclear.

R645-301-760: The Permittee must provide a map that clearly depicts the water monitoring to be conducted during reclamation. The application indicates that Map 4.7.2.3-1, *Surface and Ground Water Monitoring Sites* depicts the locations of the reclamation monitoring sites. However Map 4.7.2.3-1 depicts a monitoring location that is inaccessible due to an access dispute with the surface landowners.

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

Analysis:

Essential Hydrologic Functions

The application does not meet the Operations in Alluvial Valley Floors requirements of the State of Utah R645-Coal Mining Rules.

The application discusses alluvial valley floors in Section 7.11. The application provides reasons for why the proposed mining operation would not impact an alluvial valley floor. The application should define the extent of any alluvial valley floor within and adjacent to the proposed permit area.

Findings:

The application does not meet the Operations in Alluvial Valley Floors requirements of the State of Utah R645-Coal Mining Rules. The following deficiency must be addressed prior to Division approval:

R645-302-321- Based on available data or field studies, the application should define the extent of any adjacent alluvial valley floors within the permit and adjacent area.

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CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The application does not meet the Cumulative Hydrologic Impact Assessment requirements of the State of Utah R645-Coal Mining Rules. In order for the Division to make a finding that the mine plan has been designed to prevent material damage to the hydrologic balance outside the permit area, additional hydrologic information is required of the Permittee relative to ground and surface water resources.

Findings:

The application does not meet the Cumulative Hydrologic Impact Assessment requirements of the State of Utah R645-Coal Mining Rules. The following deficiency must be addressed prior to Division approval:

R645-301-729- In order for the Division to make a finding that the mine plan has been designed to prevent material damage to the hydrologic balance outside the permit area, the Permittee must provide additional hydrologic information relative to ground and surface water resources located within and adjacent to the proposed permit area.

RECOMMENDATIONS:

The application should not be approved at this time.